

What is claimed is:

1. A system for transmitting and receiving control data in a TDM communication network, comprising:

a single master control source for providing the control data; and,  
one or more slave TDM multiplexors within the TDM communications network,  
communicating via a TDM signal, each of the slave TDM multiplexors including

(i) a transmitter component for accepting the control data from the master control source, and inserting the control data into the TDM signal;

(ii) a receiver component for extracting the control data in the TDM signal and passing the control data to a local control processor; and,

(iii) a bridging component for passing control data along to the next TDM multiplexor, independent of the local control processor.

2. A system according to claim 1, wherein the transmitter component of each of the one or more slave TDM multiplexors (i) receives the control data from the associated receiver component, (ii) inserts the control data into the TDM signal and (iii) transmits the TDM signal to one or more TDM multiplexors.

3. A system according to claim 1, wherein the transmitter component of each of the one or more slave TDM multiplexors inserts the control data into one or more time slots of the TDM signal, and the associated receiver component extracts the control data from the corresponding one or more time slots of the TDM signal.

1 4. A system according to claim 1, wherein the transmitter component of each of the one or  
2 more slave TDM multiplexors inserts the control data into a fraction of a time slot of the TDM  
3 signal, and the associated receiver component extracts the one or more control signals from the  
4 corresponding fraction of the corresponding time slot of the TDM signal.

1 5. A system according to claim 1, wherein the TDM communications network includes one  
2 or more T1 communications links.

0 6. A system according to claim 1, wherein the TDM communications network includes one  
1 or more E1 communications links.

2 7. A system according to claim 1, wherein the TDM communications network is coupled to  
3 a second TDM communications network via a secondary communications link, so as to create a  
4 sub-network to the TDM communications network.

5 8. A system according to claim 7, wherein the secondary communications link includes an  
6 Ethernet communications link.

1 9. A system according to claim 7, wherein the secondary communications link includes an  
2 RS-485 communications link.

1 10. A system according to claim 7, wherein the secondary communications link includes an  
2 RS-232 communications link.

1 11. A system according to claim 1, wherein the control data network operates in a half duplex  
2 mode.

1 12. A system according to claim 1, wherein a first TDM multiplexor operates as a master  
2 station, and the remaining TDM multiplexors operate as slave stations, such that the slave  
3 stations transmit only when stimulated by the master station, and only one slave station transmits  
4 at any given time.

1 13. A system according to claim 1, wherein the control port includes an Ethernet  
2 communications port for communicating with the master control source via an Ethernet protocol.

1 14. A system according to claim 1, wherein the control port includes an RS-232  
2 communications port for communicating with the master control source via an RS-232 protocol.

1 15. A system according to claim 1, wherein the control port includes an RS-485  
2 communications port for communicating with the master control source via an RS-485 protocol.

1 16. A system according to claim 1, wherein the receiver component (i) performs a serial to  
2 parallel conversion of the control data, (ii) bit shifts the control data so as to form one or more  
3 control data octets, and (iii) buffers the control data octets for use by the control processor.

1 17. A system according to claim 1, wherein the transmitter component (i) buffers control data  
2 octets from the master control source, (ii) performs a parallel to serial conversion of the control  
3 data, and (iii) inserts the control data into predetermined data positions of the TDM signal.

1 18. A system according to claim 1, wherein the TDM communications network includes  
2 terminal multiplexors.

1 19. A system according to claim 1, wherein the TDM communications network includes  
2 drop-insert multiplexors.

1 20. A method of distributing control data in a TDM communications network, from a master  
2 control source to two or more TDM multiplexors within the TDM communications network,  
3 comprising:

4 receiving one or more control signals from the master control source;

5 inserting the one or more control signals into the TDM signal at the first TDM  
6 multiplexor; and,

7 extracting the control signals from the TDM signal at each of the remaining TDM  
8 multiplexors, and providing the control signals to an associated TDM multiplexor control  
9 processor.

10 21. A method according to claim 20, further including

11 (i) receiving the one or more control signals from the receive interface device at each of  
12 the remaining TDM multiplexors;

13 (ii) inserting the one or more control signals into the TDM signal; and,

14 (iii) transmitting the TDM signal to one or more TDM multiplexors.  
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